MONTHLY REPORT

NOVEMBER 1974

Contract Number: NAS 9-13303

QUANTITATIVE DETERMINATION OF STRATOSPHERIC AEROSOL CHARACTERISTICS

In November we received R. D. Juday's calibration data for S191 processed data. We appreciate the effort he has made to calibrate the data. We also received the Skybet tapes for passes 61, 65, and 78. S190A 70 mm transparencies were received for frames 385/388. The following Skylab IV/EREP data books were received: S191-69-0-ALL-42-20, S191-69-5-61-42-1. The sensor Performance Report (Volume III) for S191 was received.

Because we will have a very large volume of data to analyze we have delayed analysis of portions of the data in favor of developing an analysis system that could quickly analyze much data. Hence, software packages have been developed individually and now are being integrated into the intended computer system. We expect that before January we will at once be able to locate the field of view in earth latitude-longitude coordinates, geometrically scale the data in altitude, calibrate the data (S190, S192) and invert the brightness signature for a vertical profile of attenuation coefficients — this for all scattering angles and wavelengths. We will then attempt to invert this vertical signature to obtain estimates of particle densities and size distributions. Vertical density gradients will also be obtained.

With the exception of the S191 data calibration algorithm, we are confident that all essential software is now or will be operational before receipt of data. We will be able to begin processing the S192 data upon its arrival. The software to analyze film data is complete; analysis will begin when the remaining analysis algorithms are complete. The S191 data calibration algorithm has been completed at NASA JSC according to Bill Johnson (LEC-Houston). However, it was just discovered that it was designed to operate only on raw data and we were sent the processed data tapes. We apparently must now use R. Juday's calibration of the processed data tapes which we understand are less accurate or we could calibrate the raw data at NASA JSC using the new software and mail the resulting data to Seattle for analysis. Other alternatives may exist, but in any case we are temporarily without calibrated S191 data or software to read the S191 tapes. This can be corrected and presents no serious problems other than another delay and an additional expense we understood could be avoided by using the NASA-prepared software. The revised cost proposal recently submitted did not allow for development of this software. Use of the Juday calibration of the processed tapes would alleviate much of the expense, but it may also result in degraded experimental results. Most of our analysis is based on accurately calibrated data; the analysis will not produce desired results otherwise.

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